GILL TREMLETT

SUPERVISORY SKILLS

TREATMENT OF DIARRHOEA

WORLD HEALTH ORGANIZATION
Programme for
Control of Diarrhoeal Diseases

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TREATMENT OF DIARRHOEA

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Diarrhoea is worse and more common in persons with undernutrition. Diarrhoea can cause undernutrition and can make it worse because:

(a) nutrients are lost from the body in diarrhoea,

(b) a person with diarrhoea may not be hungry, and

(c) mothers often have a bad habit of not feeding children while they have diarrhoea, or even for some days after the diarrhoea is better.

Food should be given to children with diarrhoea as soon as they will eat.

HOW DOES DIARRHOEA CAUSE DEHYDRATION?

The body normally takes in the water and salts it needs (input) through drinks and food. It normally loses water and salts (output) through stool, urine, and sweat.

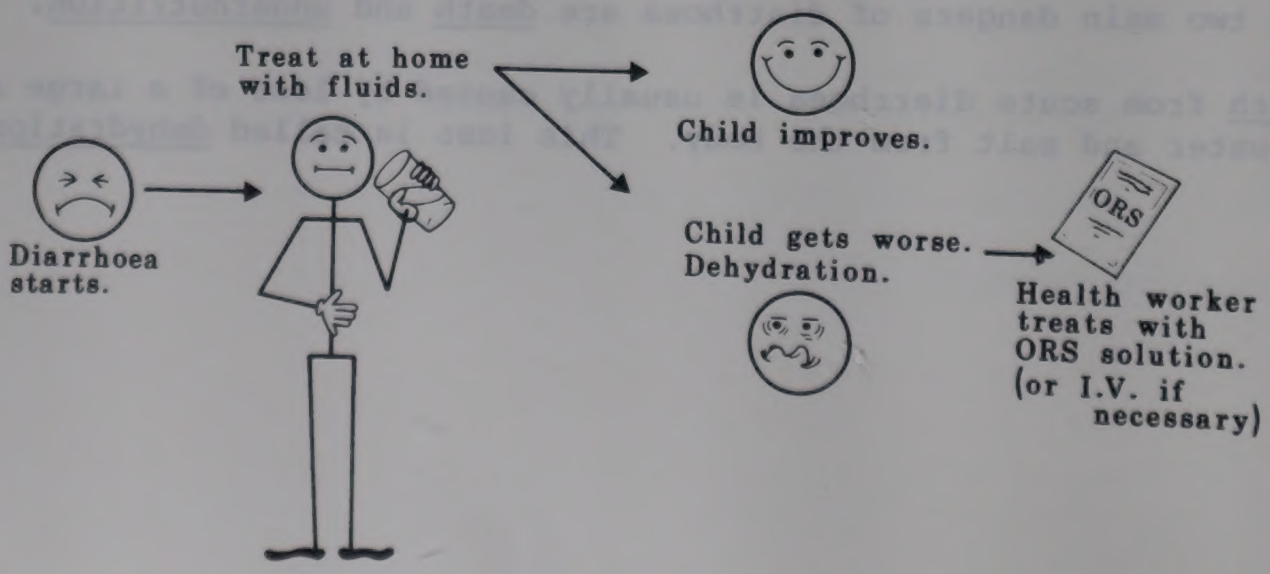
When the bowel is healthy, water and salts pass from the bowel into the blood. When there is diarrhoea, the bowel does not work normally and less water and salts pass into the blood. Thus, more than the normal amount of water and salts are passed in the stool.

This larger than normal loss of water and salts from the body results in dehydration. It occurs when the output of water and salts is greater than the input. The more diarrhoea stools a patient passes, the more water and salts he loses. Dehydration can also be caused by a lot of vomiting, which often accompanies diarrhoea.

Dehydration occurs faster in infants and young children, in hot climates, and when there is fever.

TREATING DIARRHOEA

The most important parts of treatment of diarrhoea are to (1) prevent dehydration from occurring if possible and (2) treat dehydration quickly and well if it does occur.


Treat at home with fluids.
Child improves.
Diarrhoea starts.
Child gets worse. Dehydration.
ORS
Health worker treats with ORS solution. (or I.V. if necessary)

Prevention of Dehydration: Dehydration can usually be prevented in the home by drinking more fluids as soon as the diarrhoea starts. To do this, give locally available fluids, such as rice water, fruit juice, weak tea, or special homemade sugar and salt solutions and/or increase breastfeeding. The types of fluid or solutions used in your area for preventing dehydration in the home will depend on:

- local traditions,
- availability of salt and sugar,
- access of people to health services,
- availability of oral rehydration salts (ORS),
- national policy.

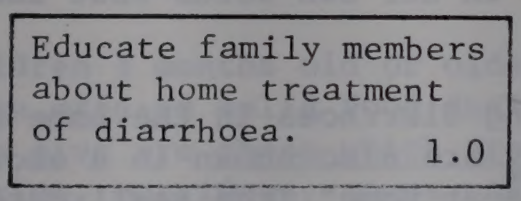
Treatment of Dehydration: If dehydration occurs, the child should be brought to a community health worker or health centre for treatment. The best treatment for dehydration once it has occurred is oral rehydration therapy using a solution made with oral rehydration salts (ORS). This treatment will be described in this module. Although this module talks mostly about treating children with diarrhoea, the same treatment is also good for adults with diarrhoea. For treating dehydration, ORS should always be used if possible.

Throughout this module you will have to consider the recommendations that are made and apply them to the conditions in your own health area.

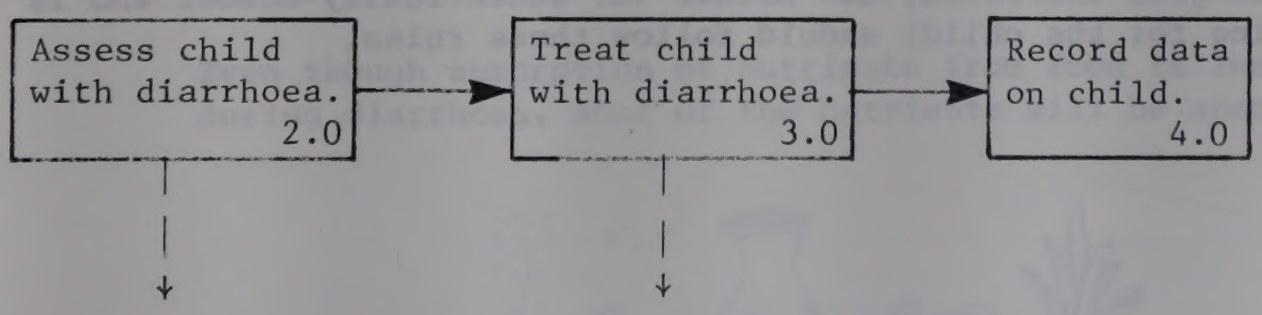
LEARNING OBJECTIVE

The tasks necessary to treat diarrhoea are shown in the following chart. The information, examples, and practice exercises in this module should prepare you to do these tasks in your own health area.

Perform the following step regularly, whenever you have the opportunity:



Perform the following steps whenever a child is brought for treatment of diarrhoea:



- *Assess degree of dehydration.*

  Look for signs or symptoms indicating another serious problem.

- *Select treatment plan and treat for dehydration.*

  Treat for any other serious problems.

1.0 EDUCATE FAMILY MEMBERS ABOUT HOME TREATMENT OF DIARRHOEA.

Dehydration can often be prevented if certain procedures are followed in the home when a child gets diarrhoea. Teaching family members that diarrhoea can and should be treated at home is very important. They also need to learn how to give the treatment.

Family members may learn from many sources, such as radio broadcasts, schools, posters, community meetings, or visits to a health centre or community health worker. You will need to meet with community leaders and community members to identify several sources which together will reach all the families in the health area. With help and cooperation from community members, each family can learn about treatment of diarrhoea in the home.

Community health workers and workers at health facilities should explain the 3 rules of home treatment to mothers and other family members whenever they have the opportunity (for example, when a mother comes for prenatal visits or brings her child for immunizations).

When explaining how to treat diarrhoea at home, a health worker should also show the mother what to do so she will understand and remember. For example, how much fluid the child should be given, or how to make sugar and salt solution, can be better shown than explained.

A mother should also be allowed to practice what she learns (for example, mixing the solution) to make sure she can do it.

For those things that are explained but not practiced (for example, actually feeding the child), the health worker should ask the mother to tell in her own words what she has learned, to be sure she remembers.

The 3 rules for treating diarrhoea in the home are discussed on the next 2 pages. They are also shown in a shorter version on "How to Treat Diarrhoea at Home" (the small card for mothers) and in Treatment Plan A on the **DIARRHOEA TREATMENT CHART**, which health workers should keep for reference. Whenever a child gets diarrhoea, the mother (or other family member who is caring for the child) should follow these rules.

3 RULES FOR HOME TREATMENT OF DIARRHOEA

1. Give the child more fluids than usual.

   - If the child is breastfed, try to give breast milk more often. If the child is not breastfed, increase the amount of normal milk feed but dilute the feed with an equal volume of water.

   - Give the child:

     - locally available drinks or liquids, such as rice water, soups, weak tea, or fruit juices, and/or

     - carefully prepared sugar and salt solutions. These solutions can be made in several ways (see Annex 1).

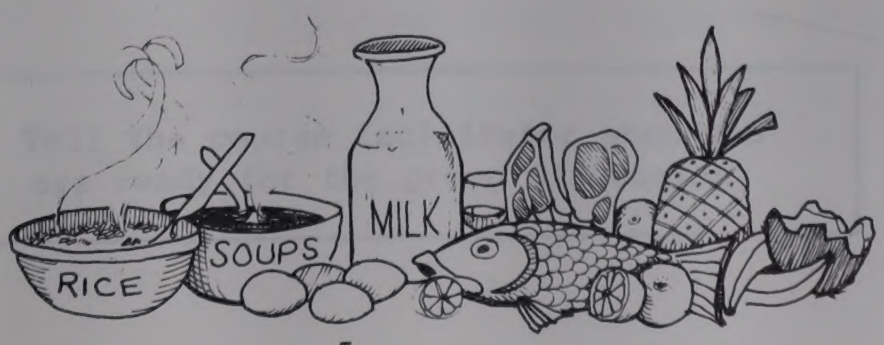
     Children under 2 years old should receive approximately 50-100 ml (1/4 - 1/2 cup) of fluid after each loose stool, and older children should receive twice this amount. Adults should take as much as they want to drink.

2. Continue feeding the child.

   Starving a child who has diarrhoea can cause undernutrition or make it worse.

   All children 4 months old or older who have been weaned should be offered solid food during diarrhoea. The best foods to give are those which are easily digested (such as boiled rice, porridges, soups, milk products, eggs, fish, and well-cooked meat) and those containing potassium (such as pineapple, bananas, and coconut water). Some fat or oil may also be given.

   Even though absorption of nutrients from food is lessened during diarrhoea, most of the nutrients will be absorbed.



A child should be allowed to eat as much as he wants. Food should be offered often (5-7 times a day) during diarrhoea, because the child is not likely to eat much at each time. The child should have at least one extra feed a day for a week after the diarrhoea has stopped.

3. Watch for signs of dehydration.

Discussion of the signs of dehydration begins on page 8 of this module. If a child develops any sign of dehydration, or if his diarrhoea lasts another 2 days, the mother should take the child to the health centre or community health worker.

Home Treatment of Diarrhoea

1. INCREASE fluids
2. CONTINUE food
3. WATCH for signs of dehydration

EXERCISE A

In this exercise you will have a group discussion about what mothers in your community are currently doing to treat diarrhoea in the home and, if their methods of treatment could be improved, how to bring about these improvements.

Issues you should prepare to discuss include:

(1) What are current home-treatment practices? Could they be improved?

(2) What specific fluids and foods will be recommended for treating diarrhoea at home in your health area?

(3) If salt and sugar solution will be recommended, how should it be made?

(4) What sources of education (for example, radio, posters, schools, health centre visits) could be used to try to reach all families in the health area?

Tell the course facilitator when you are ready for the group discussion.

2.0 ASSESS CHILD WITH DIARRHOEA.

Since the most dangerous effect of diarrhoea is dehydration, the first step in treatment of diarrhoea should be to assess the patient for signs of dehydration. The procedure outlined in this step should be followed when a health worker sees a child whose mother has stated that diarrhoea is the reason, or one of the reasons, for the child's visit. (Health workers should be familiar with all locally used words for diarrhoea or to identify various signs of diarrhoea.) These same procedures should be followed again when the health worker reassesses the patient after some treatment has been administered.

NOTE: Mothers will probably expect you to give a treatment that will stop the child's diarrhoea. It may be necessary to explain that oral rehydration treatment is meant to stop or prevent dehydration, and explain why this is more important than stopping the diarrhoea.

2.1 ASK, LOOK, AND FEEL FOR SIGNS OF DIARRHOEA OR OTHER SERIOUS PROBLEMS.

The signs a health worker should ask, look, and feel for are listed below and on the next page, and in the table "How to Assess Your Patient" on page 13. Fold out this table now. Read the following list to become familiar with the questions a health worker should ask, the conditions he should feel for, and the things he should look for. As you are reading this material, also refer to the fold-out table to learn how to interpret each sign.

The health worker should:

ASK the following questions:

- How many liquid stools per day has the child had?
  For how long has the child had diarrhoea? Is there blood (more than 1 or 2 streaks) and mucus in the stool?
- Has there been any vomiting?
  If so,
  - Has there been more than a small amount?
  - How frequently has the child vomited?
- Is the child able to drink?
  If so, is he thirstier than normal?
- Has the child passed urine in the last 6 hours?
  If so,
  - Is it a normal amount or a small amount?
  - Is it darker than normal?

LOOK for the following conditions:

- What is the child's general condition?
  - Is he well and alert?
  - Is he unwell, sleepy, or irritable?
  - Is he very sleepy, floppy, or unconscious?
  - Is he having fits?
  - Is he severely undernourished? Note: A health worker may be able to tell by observation whether a child has severe undernutrition. If he cannot tell by observation, he can determine whether a child between 1 and 5 years old is undernourished by measuring the upper arm. If the distance around the arm is less than 12.5 cm, the child is severely undernourished. One way to measure the arm is with a tri-coloured arm strip (see Annex 2). If the red part of the strip is touched, the child is severely undernourished.

- Does the child have tears when he cries?
- Are his eyes normal, sunken, or very dry and sunken?
- Is his mouth wet, dry, or very dry?
- Is his breathing normal, faster than normal, or very fast and deep?

FEEL for the following:

- When the skin is pinched, does it go back quickly, slowly, or very slowly (longer than 2 seconds)? In a baby, the health worker should pinch the belly; he may also pinch the back of the neck, or back of the hand. Note: Pinching the skin may give misleading information in severely undernourished or obese patients. In the severely undernourished patient, the skin may go back slowly even if the patient is not dehydrated. In the obese patient, the skin may go back quickly even if the patient is dehydrated.

- Can the pulse be felt?
  If so, is it normal, faster than normal, very fast, or weak?

- Is the fontanelle (the soft spot on top of the head) normal, sunken, or very sunken?
  Note: This is a helpful sign only in children whose fontanelle is not yet closed (usually children under 12 months old).

WEIGH the child, if a weighing machine is available.

The reasons for weighing the child are: (1) If the child has been weighed routinely, you can notice sudden weight losses during a diarrhoeal illness which can indicate the presence and extent of dehydration, and (2) weighing the child at intervals during therapy is helpful in assessing the progress of rehydration.

- If a weighing machine <u>is</u> available, carefully weigh the child unclothed or lightly clothed. If the child has been routinely weighed and his weight has been recorded, compare the child's present weight with his last recorded weight.

  Has there been any weight loss during the diarrhoea? If so, has there been a weight loss of 25-100 grams for each kilogram of the child's weight or has the weight loss been more than 100 grams for each kilogram of weight?

  This may be difficult to determine without a very accurate weighing machine. For this reason, it is best to rely on your assessment of the other signs to make a judgement about dehydration.

- If a weighing machine is not available, <u>do not</u> delay treatment.

TAKE TEMPERATURE:

- Does the child have a high fever (more than 38.5°C or 101°F)? Note: Take the child's temperature either in the rectum or the armpit. Rectal temperature should be taken if the health worker is used to that procedure and has several rectal thermometers or is able to disinfect the thermometer after each use. Otherwise, the axillary (armpit) temperature should be taken.

2.2 DETERMINE APPROPRIATE TREATMENT.

- Locate on the table "How to Assess Your Patient" the signs which describe the child's condition.

- Determine if any of the signs in Column D are present. If so, there are serious problems which require treatment <u>in addition to</u> any treatment which may be needed for dehydration. Treat these problems according to customary practice or refer for treatment. If there is much blood and mucus in the stool <u>and</u> high fever, suspect dysentery. Treat this problem with antimicrobials.

- Determine the degree of dehydration.

  - Look at Column C. If 2 or more of the signs listed in that column are present, conclude that the patient has <u>severe dehydration</u>.

  - If 2 or more signs from Column C <u>are not</u> present, look at Column B. If 2 or more of the signs listed in that column are present, conclude that the patient has <u>some dehydration</u>.

  - If 2 or more signs from Column B <u>are not</u> present, conclude that the patient has <u>no signs of dehydration</u>.

- Select the appropriate treatment plan based on the degree of dehydration. These treatment plans are described on the **DIARRHOEA TREATMENT CHART**, which you will be given.

  For <u>no signs of dehydration</u>, select Treatment Plan A - To Prevent Dehydration.

  For <u>some dehydration</u>, select Treatment Plan B - To Treat Dehydration with ORS Solution.

  For <u>severe dehydration</u>, select Treatment Plan C - To Treat Severe Dehydration Quickly.

EXAMPLE A mother brought her 3-year-old daughter, Rania, into a clinic because she had diarrhoea. The clinic worker **asked, looked** and **felt** for signs of dehydration. Here is the table "How to Assess Your Patient" with his findings circled:

HOW TO ASSESS YOUR PATIENT

		A	B	C	D
1. ASK ABOUT:	DIARRHOEA	Less than 4 liquid stools per day	4 to 10 liquid stools per day	More than 10 liquid stools per day	Longer than 3 weeks duration (chronic diarrhoea) Blood or mucus in the stool
	VOMITING	None or a small amount	Some	Very frequent	
	THIRST	Normal	Greater than normal	Unable to drink	
	URINE	Normal	A small amount, dark	No urine for 6 hours	
2. LOOK AT:	CONDITION	Well, alert	Unwell, sleepy or irritable	Very sleepy, unconscious floppy or having fits	Severe undernutrition
	TEARS	Present	Absent	Absent	
	EYES	Normal	Sunken	Very dry and sunken	
	MOUTH and TONGUE	Wet	Dry	Very dry	
	BREATHING	Normal	Faster than normal	Very fast and deep	
3. FEEL:	SKIN	A pinch goes back quickly	A pinch goes back slowly	A pinch goes back very slowly	
	PULSE	Normal	Faster than normal	Very fast, weak, or you cannot feel it	
	FONTANELLE (in infants)	Normal	Sunken	Very sunken	
4. TAKE TEMPERATURE					High fever - 38.5°C (or 101°F) or greater
5. WEIGH IF POSSIBLE		No weight loss during diarrhoea	Loss of 25-100 grams for each kilogram of weight	Loss of more than 100 grams for each kilogram of weight	
6. DECIDE		The patient has no signs of dehydration Use Plan A	If the patient has 2 or more of these signs, he has some dehydration Use Plan B	If the patient has 2 or more of these danger signs, he has severe dehydration Use Plan C	If the patient has chronic diarrhoea, undernutrition, or high fever, treat or refer to _____ for treatment. If there is blood or mucus in the stool and high fever, suspect dysentery and treat with antimicrobials.

Because Rania had blood and mucus in her stool and a high fever (Column D), the clinic worker suspected dysentery and prescribed Ampicillin. Since Rania had no signs from Column C and only 1 sign from Column B, the clinic worker determined that she had **no signs of dehydration.** He thus used Treatment Plan A to prevent Rania from becoming dehydrated.

EXERCISE B

In this exercise you will (1) assess the degree of dehydration of a patient, (2) select a treatment plan based on your assessment, and (3) determine if there are any other signs or symptoms which indicate a serious problem.

1. Read the following information:

   A mother brings her 18-month-old son, Pano, into the health centre. She is concerned because Pano has had diarrhoea for 3 days. You question the mother and learn that Pano has been drinking a lot of water, but is passing very little urine. He has vomited 2 times, and has had 6 watery stools today. You see that Pano's eyes are somewhat sunken, his mouth and tongue are very dry and his breathing is normal. When you pinch the skin on his abdomen, the skin goes back slowly. His pulse feels rather fast, but is strong, and his temperature is 39°C. Pano is fussy and irritable and cries during the examination. There are tears when he cries.

2. On the following table, "How to Assess Your Patient," circle each sign or symptom that you have found in Pano. We have started this for you by circling the first item.

HOW TO ASSESS YOUR PATIENT

		A	B	C	D
1. ASK ABOUT:	DIARRHOEA	Less than 4 liquid stools per day	4 to 10 liquid stools per day	More than 10 liquid stools per day	Longer than 3 weeks duration (chronic diarrhoea) Blood or mucus in the stool
	VOMITING	None or a small amount	Some	Very frequent	
	THIRST	Normal	Greater than normal	Unable to drink	
	URINE	Normal	A small amount, dark	No urine for 6 hours	
2. LOOK AT:	CONDITION	Well, alert	Unwell, sleepy or irritable	Very sleepy, unconscious floppy or having fits	Severe undernutrition
	TEARS	Present	Absent	Absent	
	EYES	Normal	Sunken	Very dry and sunken	
	MOUTH and TONGUE	Wet	Dry	Very dry	
	BREATHING	Normal	Faster than normal	Very fast and deep	
3. FEEL:	SKIN	A pinch goes back quickly	A pinch goes back slowly	A pinch goes back very slowly	
	PULSE	Normal	Faster than normal	Very fast, weak, or you cannot feel it	
	FONTANELLE (in infants)	Normal	Sunken	Very sunken	
4. TAKE TEMPERATURE					High fever - 38.5°C (or 101°F) or greater
5. WEIGH IF POSSIBLE		No weight loss during diarrhoea	Loss of 25-100 grams for each kilogram of weight	Loss of more than 100 grams for each kilogram of weight	
6. DECIDE		The patient has no signs of dehydration Use Plan A	If the patient has 2 or more of these signs, he has some dehydration Use Plan B	If the patient has 2 or more of these danger signs, he has severe dehydration Use Plan C	If the patient has chronic diarrhoea, undernutrition, or high fever, treat or refer to _____ for treatment. If there is blood or mucus in the stool and high fever, suspect dysentery and treat with antimicrobials.

3. (a) Are there any other serious problems shown by Pano that require treatment in addition to any treatment for dehydration?

(b) If yes, how would you treat those problems?

4. Based on the information you circled on the above chart,

(a) What is the degree of dehydration shown by Pano? (check one)

( ) No signs of dehydration ( ) Some dehydration ( ) Severe dehydration

(b) Which treatment plan would you select for Pano?

When you have finished this exercise, talk with the course facilitator.

EXERCISE C

In this exercise the course facilitator will show your group several pictures of children. The group will assess each picture and discuss whether the child has visible signs of dehydration or any signs or symptoms that may indicate a serious problem other than dehydration. Each of you will also receive a set of pictures to show to the health workers when you return to your health area. You should look at these pictures and ask the course facilitator any questions which you may have about identifying the visible signs of dehydration or the signs or symptoms that may indicate a serious problem.

As you look at the pictures, you may wish to write notes that will later help you identify the visible signs of dehydration and other serious problems (such as undernutrition).

3.0 TREAT CHILD WITH DIARRHOEA.

Treatment of children with signs of dehydration will involve using a solution made with oral rehydration salts (ORS). Preparation of ORS solution is a skill that all health workers should have.

3.1 HOW TO PREPARE ORAL REHYDRATION SOLUTION.

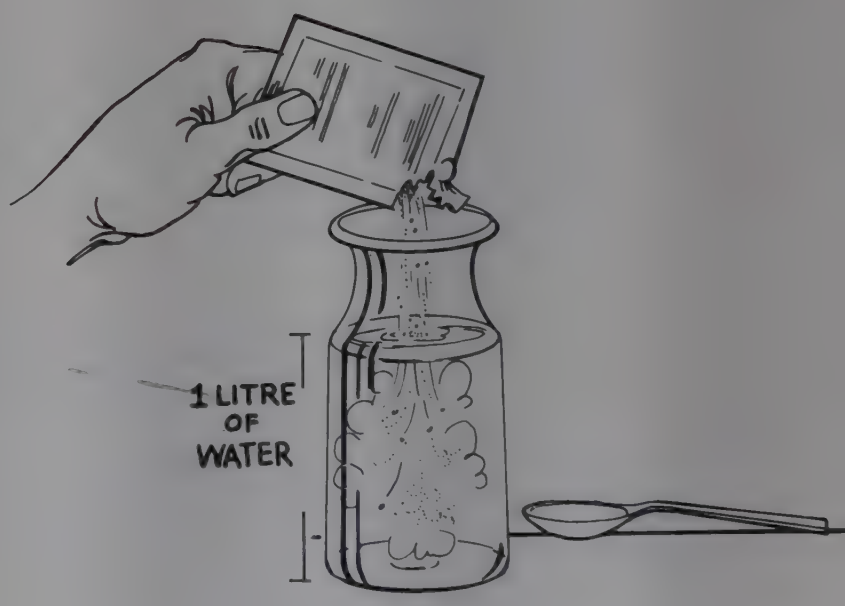
ORS often comes in packets which should contain the following ingredients:

Ingredients	Amount
Glucose (a form of sugar)	20.0 grams
Sodium Chloride-NaCl (ordinary salt)	3.5 grams
Sodium Bicarbonate-$NaHCO_3$ (baking soda)	2.5 grams
Potassium Chloride-KCl	1.5 grams

Packets that contain the ingredients in these amounts are made for mixing in one litre of drinking water. This mixture is called **ORS SOLUTION.** NOTE: Some packets of ORS are made for smaller volumes of water; they have smaller amounts of the same ingredients. When ORS packets are not available, oral rehydration solution can be made using the instructions in Annex 3.

To prepare ORS solution, perform the following steps:

- Wash your hands.
- Measure 1 litre (or correct amount for packet used) of clean drinking water into a clean container. It is best to boil and cool the water, but if this is not possible, use the cleanest water available. Use whatever container is available such as a jar, pot, or bottle.
- Pour all the powder from one packet into the water and mix well until powder is completely dissolved.
- Taste the solution so you know what it tastes like.



Fresh ORS solution should be mixed each day in a clean container. The container should be kept covered. Any solution remaining from the day before should be thrown away.

EXAMPLE Watch the course facilitator prepare the ORS solution according to the steps above.

EXERCISE D

In this exercise one participant will prepare ORS solution, and another will prepare salt and sugar solution.

1. The course facilitator will provide an ORS packet, clean drinking water, a container, measuring glass, salt, sugar, a spoon, and any other necessary supplies.

2. One participant will prepare the ORS solution in front of the course facilitator and other participants. As he prepares the solution, he should describe each step. All participants will then taste the ORS solution to become familiar with its taste when it is made correctly.

3. Another participant will prepare sugar and salt solution using one of the methods described in Annex 1 of this module or the method recommended in your country. As he prepares the solution, he should describe each step to the course facilitator and other participants.

Ensure that ORS supplies are adequately stored.

Some guidelines for storing ORS are given below:

- Temperatures should not exceed 30°C. If ORS is stored a long time above this temperature, it may melt or turn brown. In addition, humidity should not exceed 80%. If ORS is stored a long time in higher humidities, the product is likely to cake.* If you do not have a storage area which meets these two guidelines, it may be necessary to stock fewer packets, which could be used in a short period of time (such as 3 months).

- Storage areas should be clear of all types of insects, rats, and mice.

- Cartons should be arranged so that sharp objects will not make holes in the packets.

- Cartons of ORS should be arranged so that identification marks and other labels can be easily seen and so that the oldest ORS (identified by date) will be used first.

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*If you have a limited supply of ORS, do not throw away ORS that has become brown or caked. It can still be used if it dissolves completely in the water.

3.2 HOW TO TREAT A CHILD WITH DIARRHOEA.

Based on the assessment of the degree of dehydration performed in step 2.2, you selected one of the following treatment plans:

Treatment Plan A - To Prevent Dehydration
Treatment Plan B - To Treat Dehydration with ORS Solution
Treatment Plan C - To Treat Severe Dehydration Quickly

You will initially follow one of these treatment plans, and you may also need to treat other serious problems that have been identified.

In all cases, the mother should first be complimented on bringing the child to be cared for.

Each plan can include giving ORS solution. If a child begins to vomit while being given ORS solution, wait 10 minutes then continue to give ORS solution slowly and in small amounts. Some children may want to drink too quickly, which may make them vomit.

Every health worker may not have the skills or knowledge or the supplies to perform all the steps listed in each plan. The supervisor must determine which procedures can be performed by a health worker in a community setting and which ones can only be performed by a health worker in a facility.

TREATMENT PLAN A

The three treatment plans are found on the **DIARRHOEA TREATMENT CHART**. Look at that chart now and read "Treatment Plan A," which describes treatment that should be given when your assessment has shown no signs of dehydration. Then do the following exercise.

SHORT-ANSWER EXERCISE

Refer to the **DIARRHOEA TREATMENT CHART**, part 1.0 of this module, and Annex 4 of this module (Prevention of Diarrhoea) as you do this exercise.

A mother has brought her 11-month-old child to a Community Health Worker because the child has diarrhoea. The mother is breastfeeding the child. She says she lives far from the health worker and might not be able to come back for several days, even if the child gets worse. The health worker asks, looks and feels for signs of dehydration and finds that the child has none. He decides to begin treatment using Treatment Plan A. The mother mentions that usually she gives her children rice water when they get diarrhoea but heard that the Community Health Worker has something better.

Describe what the health worker would do and what he would tell the mother.

Answer:

Your answer should cover these points in your own words. It may be less detailed than this.

The health worker would first compliment the mother for bringing her child before he got very sick.

He would tell the mother to increase the amount of fluids offered to the child. This would include increasing the amount of breast milk and giving other locally available fluids, such as rice water. He would explain that giving rice water, weak tea, or juice is a good practice when children get diarrhoea.

He would explain that the mother should feed the child often (5-7 times a day) with foods that are easily digested and which contain potassium (and would give examples of these foods that the mother would know).

He would explain to the mother how to watch for and recognize signs of dehydration and make sure she understands. Note: Some health workers tell mothers only the more obvious signs of dehydration (so they will not have so much to remember). These are:

- greater than normal thirst,
- dark urine,
- unwell, sleepy or irritable condition,
- sunken eyes,
- sunken soft spot on the top of the head,
- a pinch of skin goes back slowly.

He would tell the mother to come quickly to the health centre or to a community health worker if signs of dehydration appear or if the diarrhoea lasts another 2 days.

He would explain to the mother how diarrhoea can be prevented by giving the child fresh, clean and well-cooked food and clean drinking water, and by practicing good hygiene.

Because the mother lives far away, the health worker would then give her enough ORS to last 2 days. He would show her how to prepare ORS solution and make sure she understood. He would tell her to give the child 50-100 ml of ORS solution after each loose stool, show her how much that is, and have her begin giving ORS solution to the child. He would also tell her what to do if the child vomits.

TREATMENT PLAN B

Now read "Treatment Plan B," describing treatment when some dehydration is present, on the **DIARRHOEA TREATMENT CHART.** Then do the following exercise. Remember that it is important to give ORS solution in small amounts, as with a spoon, and at a steady pace.

SHORT-ANSWER EXERCISE

1. A child with diarrhoea has some signs of dehydration. The child weighs 5 kg and is 8 months old. How much ORS solution should be given to him during the first 4-6 hours?

2. A mother has brought her 2-1/2-year-old daughter to the health facility. The child was assessed and found to have some signs of dehydration. While at the facility, the mother gave her 700 ml of ORS solution within 4 hours. After 4 hours, the child was reassessed and it was determined that she still had some of the signs of dehydration but she was improving. Assuming that the mother can stay at the facility, what should be done next?

3. A one-year-old baby with diarrhoea was brought to the health centre by his grandmother. The baby was assessed and found to have some signs of dehydration. The grandmother must leave soon because her bus will be leaving and her home is too far away for her to walk. What should the health worker do?

Answer:

1. 200 to 400 ml of ORS solution should be given in a period of 4 hours. (When both the weight and the age of the child are known, determine the amount of solution needed according to the child's weight.)

2. Give the child an additional 600 to 800 ml of ORS solution during the next 4 - 6 hours.

3. Mix some ORS solution, showing the grandmother how it is done. Show the grandmother how to feed the baby the solution, slowly with a spoon, and ask her to begin now. Tell the grandmother:

   - to continue for 4 - 6 hours until 600 mls has been given.
   - after that, to give as much solution to the baby as he wants.
   - if the baby's eyelids become puffy, stop giving ORS solution and give other fluids instead until the eyelids return to normal. Then resume ORS solution.

Two packets of ORS should be given to the grandmother. The signs of dehydration should be pointed out and explained to the grandmother. The grandmother should then repeat them and show how she will look for them in the morning. If any of the signs of dehydration are still present in the morning, the grandmother should bring the baby back to the health centre.

TREATMENT PLAN C

Read "Treatment Plan C," describing treatment for severe dehydration, on the **DIARRHOEA TREATMENT CHART**. Also read Annex 5, "Oral Rehydration Using a Nasogastric Tube," and Annex 6, "Intravenous Therapy for Severe Dehydration." Then do the following exercise:

SHORT-ANSWER EXERCISE

1. A 9 kg. child who is very drowsy and cannot drink is brought to a small health centre. There is no IV equipment at the health centre but the health worker knows how to use a nasogastric tube. How much ORS solution should be given through the nasogastric tube in the first hour?

2. A 4-month-old baby weighing 5 kg. has received 350 mls of IV fluid in 3 hours and is improving. She can now drink. Complete the following sentence to show the correct treatment.

   Give _____ mls of _____ within the next ____hour(s).

3. A 3-month-old boy weighing 4 kg. has been treated for severe dehydration for 6 hours, first with IV for 3 hours and then with ORS solution for 3 hours. The child has just been reassessed. He is improving but still has some signs of dehydration. Complete the following sentence to show the correct treatment.

   Give _____ mls of _____within the next ____ hour(s).

Answer:

1. 180 ml (20 x 9 = 180)
   (The child weighs 9 kg, and Annex 5 specifies 20 ml/kg.)

2. Give 200 ml (40 ml x 5 kg) of ORS solution within the next 3 hours.

3. Give 200 to 400 ml of ORS solution within the next 4 - 6 hours (Amount of ORS solution is based on the table in Treatment Plan B on the **DIARRHOEA TREATMENT CHART.**

Treatment should end with the mother knowing **WHAT** to do at home and **HOW** to do it.

TREATMENT OF OTHER SERIOUS PROBLEMS

Refer to the **DIARRHOEA TREATMENT CHART** and Annex 7 of this module as needed as you do the following exercise:

SHORT-ANSWER EXERCISE

A child is brought to you for treatment of diarrhoea. The child is 1 year old and weighs 10 kg. You assess the child and find that he has some dehydration. You also find that he has a fever of 40.5^{o}C and blood and mucus in the stool.

In addition to ORS treatment for his dehydration, what other treatment should you give the child?

Answer:

You should begin antimicrobial treatment for possible dysentery. According to Annex 7, the drug of choice would be either Ampicillin or Trimethoprin-Sulfamethoxazole. If you chose Ampicillin, the dose would be 1000 mg a day (100 mg x 10 kg) in 4 doses. That would be 250 mg given 4 times a day. The treatment would be continued for 5 days.

You should also try to lower the fever (for example, with a wet cloth and fanning).

EXERCISE E

In this exercise you will read descriptions of 3 different children with diarrhoea. For each child, you will assess the degree of dehydration, select a treatment plan, and describe the treatment you would give.

Refer to the **DIARRHOEA TREATMENT CHART** as you work. You should become familiar with the chart so that you will be comfortable referring to it when you treat patients who come to you.

CASE 1

Sione is 5 months old. His mother is breastfeeding him. His diarrhoea started last night and he has had 8 stools which were very watery. He also vomited. The health worker looks for blood and mucus in the stool but cannot see any.

As the health worker examines Sione, she finds that the skin pinch goes back slowly, the fontanelle is a little sunken, and the eyes are a little sunken. Sione does not have a fever and is not vomiting now. His urine amount is normal.

a. Does the child have signs of dehydration? If yes, describe them.

b. Is he severely dehydrated?

c. Which treatment plan should the health worker select and follow?

d. How much ORS solution should be given to the child in the first 4 - 6 hours?

e. What should be done if the child vomits?

f. When should the child be reassessed?

When the health worker reassesses Sione, she finds that he is still having some diarrhoea. His skin pinch goes back quicker than before, but his eyes and fontanelle are still a little sunken.

g. Describe the treatment to be given now.

After another 4 hours, Sione looks much better. His eyes have filled out, the fontanelle is normal, and the skin pinch goes back quickly.

h. What should be done next? Why?

CASE 2

Ana is 3 years old and weighs 13 kg. Her diarrhoea started 24 hours ago and she has had 3 liquid stools. Her mother took her to the home of the community health worker. As the health worker assesses the child, he finds that she looks quite well. Her mouth is wet, her skin when pinched goes back quickly, her eyes look normal, her pulse is normal, and she passes urine normally. However, her mother says she wants to drink a lot.

a. Identify the sign(s) of dehydration which Ana has.

b. What treatment plan should the health worker select and follow?

c. It is the policy of the national diarrhoeal disease control programme to give ORS solution to children who visit a health worker for treatment of diarrhoea. The health worker gives Ana's mother enough ORS packets for 2 days and shows her how to mix and give ORS solution. Ana's mother gives Ana about 200 mls of ORS now. When should the mother give Ana ORS solution again, and how much should she give to her?

d. What advice should the mother be given about feeding the child? (List the liquids and foods available in your area.)

e. What should the mother do in the future when the child gets another episode of diarrhoea?

CASE 3

Dano is 8 months old. He is already weaned. His mother brings him to a community health worker because he has had diarrhoea for a week and it is now worse. (There have been more than 10 liquid stools the day she brings him to the health worker). Dano has received no food since the diarrhoea started. He is very quiet and floppy. He has passed no urine since last night. When he cries there are no tears. The health worker takes the child's temperature and finds that it is 40^{o}C. Dano has very dry and sunken eyes and a very sunken fontanelle, and a very fast pulse. However, he is conscious and opens his eyes to look at the health worker.

a. What signs of dehydration does Dano have?

b. Is there <u>some</u> dehydration or <u>severe</u> dehydration?

c. Are there any other serious problems?

The community health worker is not able to provide IV treatment, so he decides to send Dano with his mother to the health centre.

d. What should he do for Dano before the child is sent to the health centre (Dano is able to drink)?

Dano and his mother arrive at the health centre where IV treatment can be administered. This health centre uses Ringer's Lactate solution. The nurse weighs Dano and finds he weighs 5 kilos.

e. How much IV fluid should be given to the child the first hour?

Two hundred ml of IV fluid are given to the child within the <u>next 2</u> hours. His fever is treated according to the customary procedure of the health centre. The child's progress is assessed. The number of stools is decreasing and he has urinated. His eyes and fontanelle are still sunken, his pulse is not as fast, and he is a little more alert.

f. What should the child be given during the next <u>3</u> hours? How much should be given?

After 6 hours of therapy, Dano's fontanelle is a little sunken. His eyes are sunken but not dry, and his pulse is normal. He no longer has a high fever.

g. What treatment plan should be selected and followed?

When you have finished this exercise, talk with the course facilitator.

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EXERCISE F

In this exercise you will, if possible, go to a health centre where you will see a health worker assess and treat a child with diarrhoea. There may be a group discussion about the steps the health worker performed to assess and treat the child. During your visit to the health centre, you will, if possible, assess a child with diarrhoea, determine the correct treatment, and treat the child.

- You should take your copy of the **DIARRHOEA TREATMENT CHART** with you to the health centre so you can refer to the assessment table and the treatment plans.

- Write in the space below information which will help you assess and treat children in your own health area. (For example, write reminders or notes which will help you recognize signs of dehydration, administer oral rehydration therapy, or teach mothers to prepare OR solution.)

4.0 RECORD DATA ON CHILD.

Health workers in the community and in the health facility should keep a record on each patient who comes for a service or treatment.

At a minimum, each child must be identified in the records by:

- Name
- Age (or date of birth)
- Date of visit
- Reason for visit
- Diagnosis
- Type of treatment or service provided

This information is needed because a health worker should be able to determine each month the number of episodes of diarrhoea treated in children less than 5 years old and the number of children being given other services.

Additional data which may be recorded includes sex, address (the health worker may also want to ask the distance the patient has travelled to receive treatment), and information from the physical examination.

As the supervisor, you may wish to review these records periodically when monitoring actual use of various services and planning future use.

The forms used for patient records may be different in different facilities or areas. What is important about the form is that at least the minimum data is included, and the form is easy to understand and easy to fill out. If existing record-keeping systems in your health area do not include the minimum information, you might want to either modify them to include that information or create new forms. If you can have the same form used by all the health workers you supervise, that will make it easier for you to collect data when you monitor.

EXERCISE G

In this exercise you will draw the patient record which will be kept by the health workers you supervise and then you will fill it out with information from a specific case study. (If you can easily obtain the patient record which your health workers use, do so rather than drawing it in the space below.) If you supervise facility health workers and community health workers, and if there is a different form for each type of worker to fill out, draw or obtain both records.

1. Attach or draw the record being used by the health workers you supervise. You may wish to make changes in the present record based on the information you read on the previous pages. If so, include the change and place an X by the part you have changed.

2. Refer to the case study about Sione on page 28 and then fill out the patient record you have drawn or obtained. Some additional information about Sione is listed below:

   - His family's name is Kusmeiani.
   - His address is 6 Naluko Road, which is 3 kilometres from the health centre.
   - Sione's birthdate is November 17, 1981.
   - The date of Sione's visit to the health centre for treatment of diarrhoea was April 18, 1982.

When you have finished this exercise, talk with the course facilitator.

REMEMBER THIS

ABOUT TREATMENT OF DIARRHOEA

- The most important problem that must be treated in a patient with diarrhoea is **dehydration.**

- Family members should be educated about treating diarrhoea properly **in the home.** This can often prevent dehydration from occurring.

- When a child comes to a health worker with diarrhoea, the health worker should:

  - **Ask, look** and **feel** for signs of dehydration.

  - Select a treatment plan based on the degree of dehydration.

  - Give OR therapy to dehydrated children.

  - Check for serious problems other than diarrhoea, and give appropriate treatment for any serious problems found.

- Use the **DIARRHOEA TREATMENT CHART** when assessing and treating children with diarrhoea.

ANNEX

Annex 1. How to Make Homemade Salt and Sugar Solution

Annex 2. Use of the Tri-coloured Arm Strip

Annex 3. What the Health Worker Should Do When ORS Packets Are Not Available

Annex 4. Prevention of Diarrhoea

Annex 5. Oral Rehydration Using a Nasogastric Tube

Annex 6. Intravenous Therapy for Severe Dehydration

Annex 7. Antimicrobials Used in the Treatment of Specific Cases of Acute Diarrhoea

ANNEX 1

HOW TO MAKE HOMEMADE SALT AND SUGAR SOLUTION

A special drink (salt, sugar, and water) can be made to treat diarrhoea and prevent dehydration at home. There are many methods that can be used for measuring the correct amounts of sugar and salt. Following are 2 examples.

Example 1

This example shows a method for mixing 1 litre of special drink.

What you need

A spoon. This should be a small spoon, a "teaspoon," that holds 5 ml (ccs) of fluid or less,

A clean container that will hold 1 litre or a little more,

Salt, as used on food or for cooking,

Sugar of any sort, unrefined lump sugar or purified sugar,

Drinking water (clean or boiled water).

What to do

1. Measure 1 litre of drinking water into the container. 5 cupfuls or 5 glass-fuls are about 1 litre. (See Figure 1)

2. Take salt in a tea-spoon, level it with a knife or a flat object (see Figure 2). Add 1 level spoonful of salt to the water and mix the water.

3. Taste the salt and water. It should not be very salty. If it tastes more salty than tears, pour away this mixture and make it again with less salt.

4. Take 8 level teaspoonfuls of sugar. Put these in the water and mix the water.

Figure 1
MAKING SALT AND SUGAR WATER

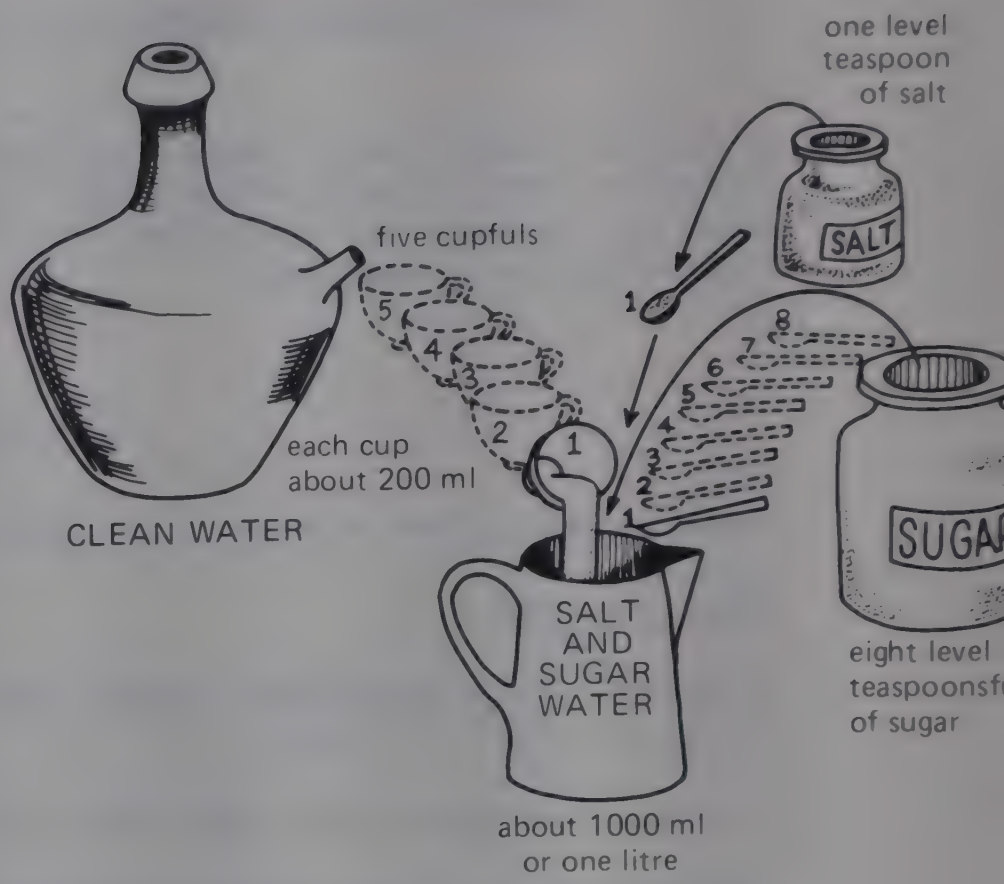
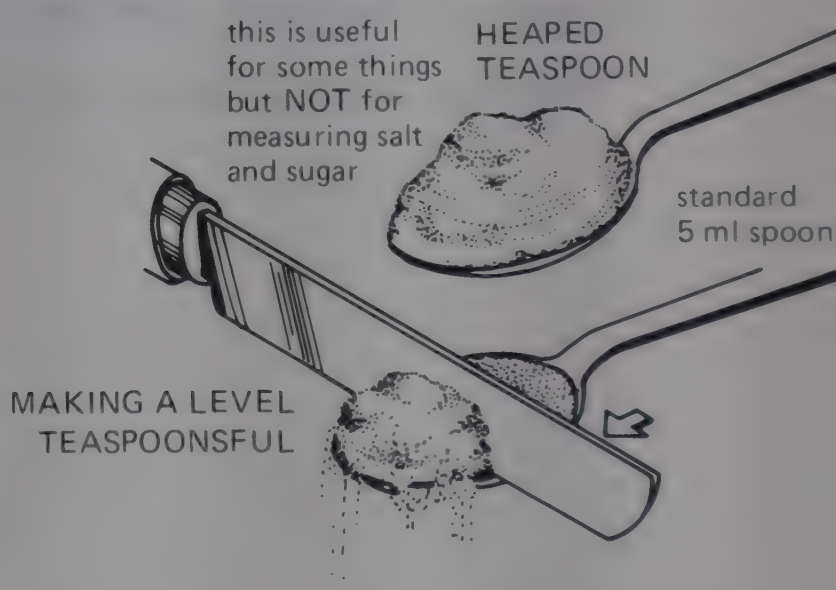


Figure 2. Measuring salt and sugar


this is useful for some things but NOT for measuring salt and sugar
HEAPED TEASPOON
standard 5 ml spoon
MAKING A LEVEL TEASPOONSFUL

SOURCE: W. Cutting

Example 2

This example shows a method for mixing <u>1 glass</u> (about 1/3 litre) of special drink.

<u>What you need</u>

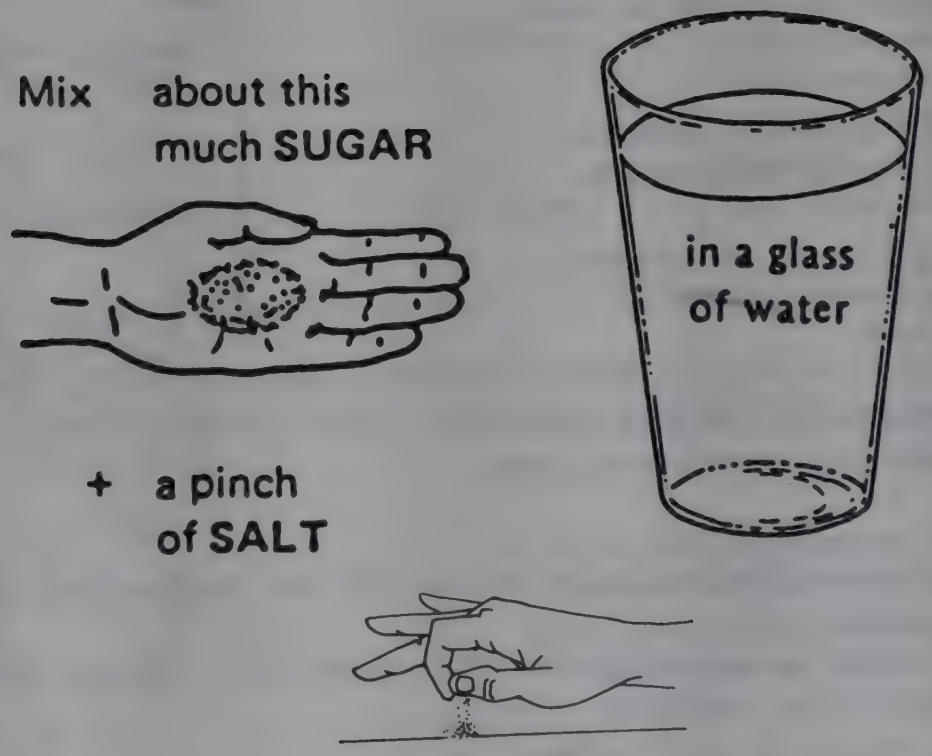
A clean, medium-sized glass or other container of about the same size (such as a juice or beer can).

Salt, as used on food or for cooking.

Sugar of any sort, unrefined lump sugar or purified sugar.

Drinking water (clean or boiled water).

<u>What to do</u>

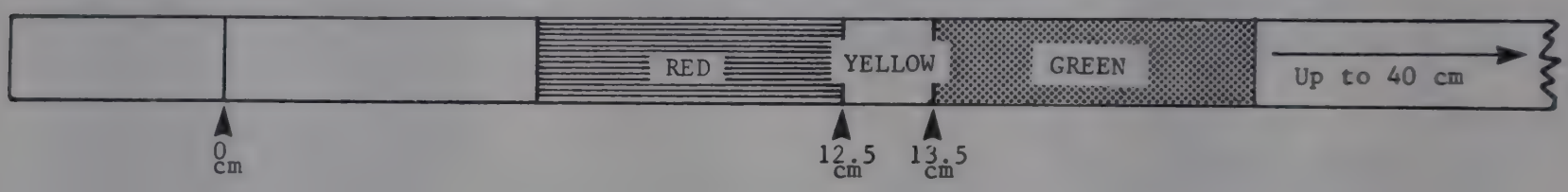


ANNEX 2

USE OF THE TRI-COLOURED ARM STRIP

When babies are about 1 year old, they have quite a lot of fat under the skin of their arms. When they are 5 years old, there is much less fat and more muscle. The distance around the upper arm remains almost the same between the ages of 1 and 5 years. If a child is undernourished, this distance is reduced, his muscles waste, and his arm becomes thin. By placing a special measuring strip around the upper arm one can find out whether a child between the ages of 1 and 5 is undernourished or not.

This measuring strip is called a tri-coloured arm strip and looks like this:



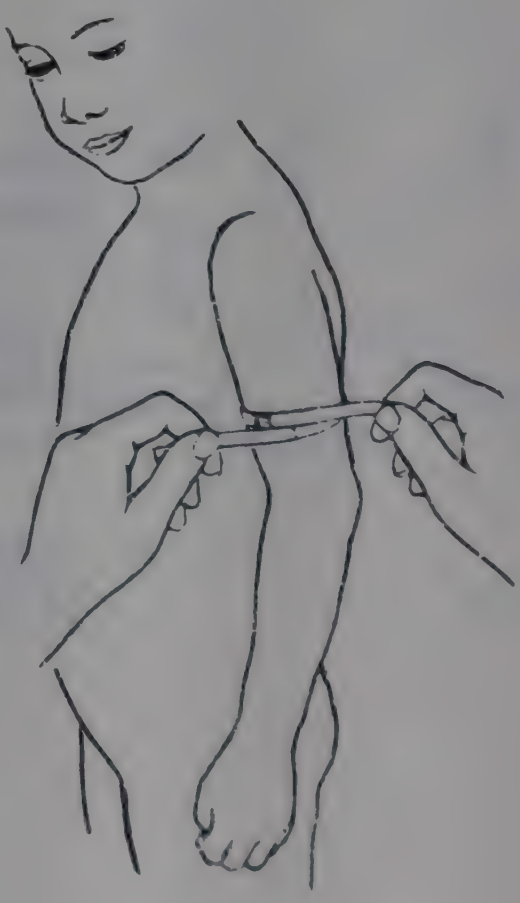
You can make one from a string or strip of material that does not stretch, being careful that the markings are accurate.

To use this strip:

Put the strip around the mid upper arm of the child and see which colour is touched by the 0 cm end of the strip.

- If the <u>green</u> part is touched, the child is well nourished.
- If the <u>yellow</u> part is touched, the child is moderately undernourished.
- If the <u>red</u> part is touched, the child is severely undernourished.

This method of measuring the arm is useful because the health worker can determine undernutrition in a child without using a weighing machine or knowing the child's age. However, since it only shows large changes in a child's nutrition, it is not suitable for determining whether the child is improving.



ANNEX 3

WHAT TO DO WHEN ORS PACKETS ARE NOT AVAILABLE

The health worker must be instructed on what to do when his supply of packets of ORS is finished. He should understand the routine procedure for ordering more, and how to obtain emergency supplies quickly.

1. If packets of ORS are not available, oral rehydration solution can be made with the salts and sugars shown in this table:

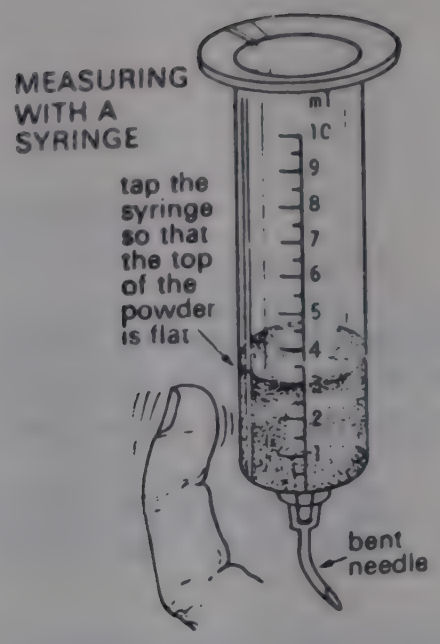
Salts and Sugars	Amount Required for <u>1 litre</u> of Solution*	Note
Sodium Chloride (common salt)	3.5 grams	You cannot make rehydration solution without this.
Glucose <u>or</u> Sucrose (common sugar)	20 grams 40 grams	You cannot make rehydration solution without <u>one</u> of these
Sodium bicarbonate	2.5 grams	You can make rehydration solution without these, but it is much better if you have one or both of them.
Potassium Chloride	1.5 grams	

*The sugar and salts (in the amounts shown) should be completely dissolved in one litre of clean drinking water (boiled water, cooled before use, is best).

2. The salts and sugars can be measured by any of several methods:

   (a) Scales may be available, for example, in a local pharmacy.

(b) Small volume measures (such as 5 or 10 ml syringes) can be used to give approximate weights as follows:



3 ml = approx. 3.5g of Sodium Chloride

3 ml = approx. 2.5g of Sodium Bicarbonate

1.5 ml = approx. 1.5g of Potassium Chloride

30 ml = approx. 20.0g of glucose

50 ml = approx. 40.0g of sucrose

(c) Measuring spoons.[1]

3. If you measure the salts and sugars in bulk, it is very important to mix them well before dividing them into smaller amounts.

4. Rehydration solutions that contain sugar and 3 salts (as described above) are best. ORS packets are most convenient for making rehydration solutions because the sugar and salts are already measured. Other solutions, for example those made with common salt and sugar (as described in Annex 1), should be used only if ORS packets or the recommended sugar and salts are not available.

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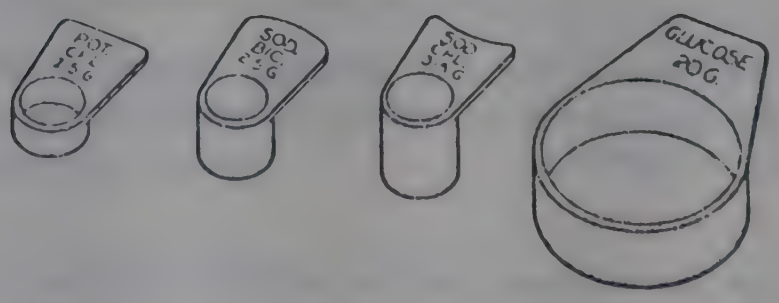
[1]A set of 4 measuring spoons may be ordered from T.A.L.C. (Foundation for Teaching Aids at Low Cost), 30 Guilford Street, London WCIN IEH, United Kingdom.



ANNEX 4

PREVENTION OF DIARRHOEA

An important job of the health worker is to help prevent diarrhoea by teaching the people some simple facts about:

- Food and feeding children
- Water
- Hygiene

- FOOD AND FEEDING CHILDREN

  The table, "Feeding Children" on the following page summarizes many of the points listed below:

  - Breastfeeding, whenever the baby wants, is very important in the first 4 to 6 months of life. Breastmilk is the best food for babies of this age and helps to prevent and stop infections, including diarrhoea. Breastfeeding should continue for at least 2 years.

  - When breastfeeding is not possible and other milk formulas must be given, it is better to give them with a cup and spoon rather than a bottle. Feeding babies milk from bottles is not good because it is hard to keep the bottles clean.

  - It is important that mothers know that they should eat more food than normal during pregnancy and when they are breastfeeding.

  - At 4 to 6 months all babies should start to have other foods. Soft, mashed foods are best.

  - All food should be fresh and prepared in a clean place using clean pots and utensils.

  - Cooked food should be eaten while still hot or well heated again before eating.

  - Uncooked food should be washed in clean water before eating.

Feeding Children[1]

Child's Age	Breastfeeding	Other Foods
Birth	Start at birth. Feed whenever the baby wants	None, unless not enough breast milk
4 months	Continue	Add at least 2 other soft, mashed foods like _____* _____ two times a day.
6 months	Continue	Add other foods like _____* _____ four times a day.
One year or older	Continue up to at least 2 years of age.	All foods 4 to 6 times a day

*These foods should be "energy rich." Most staple foods (such as cereals, roots, tubers, stems) do not contain enough energy per unit weight for infants and young children. Where possible, some oils, fats, or sugars should be added. The diet should be varied with addition of legumes, animal foods, fresh fruits, and leafy green vegetables.

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[1]Adapted from "Guidelines for Nutrition Training of Primary Health Care Workers and Other Community Workers," WHO document NUT/80.2 (1980).

- WATER

  - Drinking water should be taken from the cleanest possible source. Unless you are sure that the water is safe, it should be boiled before drinking. This water should be kept in a clean, covered container and used only for drinking.

  - Washing of the body, clothes, or pots and utensils should not be done at the source of drinking water.

  - Stools and urine should not be passed in or near the source of drinking water.

- HYGIENE

  Hygiene concerns activities to stop germs from getting into the body. These activities involve the village, the household, and each person. The health worker should discuss the points listed below with all members of the village. He should learn from them the local beliefs about diarrhoea, and encourage those that are helpful and explain why some local practices are harmful.

  - The messages in the previous sections about food preparation and water are also about HYGIENE.

  - Dirt, rubbish, stools, and urine contain germs which cause infections, including diarrhoea.

  - Stools and urine should be passed in a latrine. If there is a latrine, it should be kept clean. If there is no latrine, they should be passed in one place away from the village and away from the source of drinking water. Stools passed by children near the house should be taken away or buried.

  - Hands should always be washed after passing stools and before preparing food, eating, or feeding children. Children's hands should be washed too.

  - Rubbish should be burned, buried, or taken to a place far away from the village and away from the source of drinking water.

  - Flies carry germs from dirt, rubbish, and stools into the house and onto food. Flies should be kept away from stools (by burying stools), from latrines (by keeping them clean), from rubbish (by burning or burying), and from food (by keeping it covered).

ANNEX 5

ORAL REHYDRATION USING A NASOGASTRIC TUBE

If health workers are trained to use a nasogastric tube, they can administer ORS solution to a child who is not in shock but cannot drink. When a child is in shock, this procedure should be used **only as an emergency measure** (that is, when it is not possible to give IV treatment).

ORS solution can be put into the nasogastric tube using a syringe or a clean, used, intravenous infusion bottle.

- The recommended rate is 20 ml/kg body weight per hour.

NOTE: If the patient's abdomen becomes swollen during this treatment, **stop giving ORS solution.**

ANNEX 6

INTRAVENOUS THERAPY FOR SEVERE DEHYDRATION

1. Technique of administration

The technique of administration of intravenous fluids can only be taught by practical demonstration by someone with experience. Intravenous therapy should be given only by trained persons. Several general points are made here.

The needles, tubing, bottles, and fluid used for intravenous therapy must be sterile.

Intravenous therapy can be given into any convenient vein. The most accessible veins are generally those in front of the elbow, on the back of the hand, at the ankle, or, in infants, on the side of the scalp. Use of neck veins or incision to locate a vein are usually not necessary and should be avoided if possible. In cases requiring rapid resuscitation, a needle may be introduced into the femoral vein where it must be held firmly in place and removed as soon as possible. In some cases of severe dehydration, particularly in adults, infusion into two veins may be necessary; one infusion can be removed once rehydration is well in progress.

It is useful to mark intravenous fluid bottles at various levels with the times at which the fluid should have fallen to those levels. This allows easier monitoring of the rate of administration.

2. Solutions for intravenous infusion

A number of solutions are available for IV infusion; however, some do not contain appropriate or adequate amounts of the electrolytes required to correct the deficits found in dehydration associated with acute diarrhoea. The following is a brief discussion of the relative suitability of each of these solutions.

Preferred solution

- Ringer's Lactate Solution (also called Hartmann's Solution for injection) is the best commercially available solution. It supplies adequate concentration of sodium and potassium, and the lactate yields bicarbonate for correction of the acidosis. It can be used in all age groups for dehydration due to acute diarrhoea of all causes.

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Less suitable solutions (ORS Solution by nasogastric tube should be considered as an alternative to the use of the following intravenous solutions.) If they are used, they should be replaced by ORS solution given by mouth as soon as the patient can drink.

- Half-strength Darrow's Solution (also called Lactated Potassic Saline). This solution does not contain enough sodium chloride to correct the sodium deficit and ongoing sodium losses in adults with severe dehydration and continuing severe diarrhoea.

- Normal Saline (also called Isotonic or Physiological Saline): This solution is often readily available. It will not correct the acidosis and will not replace potassium losses. Sodium bicarbonate or sodium lactate and potassium chloride can be given at the same time, but this requires careful calculation of amounts, and monitoring is difficult.

- Half Normal Saline in 5% Dextrose. Like Normal Saline, this solution will not correct acidosis nor replace potassium losses. It also will not provide enough sodium chloride for many adults with acute diarrhoea.

Unsuitable solutions

- Plain Glucose and Dextrose Solutions should not be used as they provide only water and sugar. They do not contain electrolytes and thus they do not correct the electrolyte losses or the acidosis.

3. Providing IV Therapy for Severe Dehydration

The purpose is to give the patient a large quantity of fluids quickly to replace the very large fluid loss which has resulted in severe dehydration.

- Begin intravenous therapy quickly in the amount specified on the table on the following page.

GUIDELINES FOR REHYDRATION THERAPY FOR SEVERE DEHYDRATION*

Age Group	Type of Fluid	Amount of Fluid (per kg body weight)	Time of Administration
Infants (under 12 months)	IV Ringer's Lactate	30 ml/kg	Within 1 hour
	FOLLOWED BY		
	IV Ringer's Lactate	40 ml/kg	Within next 2 hours
	FOLLOWED BY		
	ORS Solution	40 ml/kg	Within next 3 hours
Other children and adults	IV Ringer's Lactate	100 ml/kg	Within 4 hours; initially as fast as possible until radial pulse is easily felt

*The volumes of fluid and rates of administering treatment are averages based on usual needs. These amounts should be increased if they are not adequate to achieve rehydration, or decreased if hydration is achieved earlier than expected or if the appearance of puffiness around the eyes suggests overhydration. Once the health worker has gained some experience in rehydration therapy he may not need to follow this exact schedule.

- For an infant, the entire 6 hour course of therapy should be followed to quickly restore the fluid loss of the severely dehydrated patient. During that 6-hour period, the progress of the rehydration therapy should be assessed after one hour and then every 1-2 hours to determine if the volume or rate of administration needs to be increased. In particular, attention should be given to:

  - the number and volume of stools passed
  - the extent of vomiting
  - the presence of, and changes in, the signs of dehydration
  - whether the rehydration fluid (oral or IV) is being successfully given and in adequate amounts.

If the signs of dehydration and the diarrhoea and vomiting have become worse or remain unchanged, the rate of administration and the amount of fluid given may need to be increased.

- While rehydration therapy (to replace the body's abnormal losses) is in progress, the patient's normal daily fluid requirements must also be considered. After 6 hours, begin breastfeeding, or for the non-breastfed infant, give 100-200 ml of clean water before continuing OR therapy. (For older children and adults, plain water should be available to patients to drink as they wish, in addition to ORS solution.)

- After the first 6 hours (4 hours for older children and adults), ASK, LOOK, and FEEL for the signs of dehydration. At this point complete or near complete rehydration of the severely dehydrated patient should have been achieved. The patient will require continued therapy to prevent dehydration from returning as long as the diarrhoea continues.

  - If there are no signs of dehydration, use Plan A - Prevent Dehydration.

  - If some of the signs of dehydration are still present but the child is improving, give ORS for another 6 hours in the amount specified in the table in Treatment Plan B.

  - If the signs of dehydration are worse or remain unchanged, rehydration therapy must be continued.

ANNEX 7

ANTIMICROBIALS USED IN THE TREATMENT OF SPECIFIC CASES OF ACUTE DIARRHOEA

Clinical Diagnosis of Cause	Drug(s) of Choice:[1]	Alternative:[1]
Suspect Cholera[2,3]	Tetracycline Children - 50 mg/kg/day in 4 divided doses x 3 days Adults - 500 mg 4 times a day x 3 days	Furazolidone Children - 5 mg/kg/day in 4 divided doses x 3 days Adults - 100 mg 4 times a day x 3 days Erythromycin[4] Children - 30 mg/kg/day in 3 divided doses x 3 days Adults - 250 mg 4 times a day x 3 days
Shigella dysentery 2,5	Ampicillin - 100 mg/kg/day in 4 divided doses x 5 days -OR- Trimethoprim (TMP) - Sulfamethoxazole (SMX) Children - TMP 10 mg/kg/day in 2 divided doses x 5 days Adults - TMP 160 mg and 800 mg twice daily x 5 days	Nalidixic Acid - 55 mg/kg/day in 4 divided doses x 5 days (all ages) Tetracycline - 50 mg/kg/day in 4 divided doses x 5 days (all ages)
Acute intestinal amoebiasis	Metronidazole[6] Children - 30 mg/kg/day x 5-10 days Adults - 750 mg 3 times a day x 5-10 days	In very severe cases: Dehydroemetine hydrochloride by deep intramuscular injection, 1-1.5 mg/kg (maximum 90 mg) for up to 5 days depending on response (all ages)

[1] All doses given are for oral administration unless otherwise indicated.
[2] Decision on selection of antibiotic for treatment should take into account frequency of resistance to antibiotics in the area.
[3] Antibiotic therapy not essential for successful therapy but shortens duration of illness and excretion of organisms in severe cases.
[4] Other choices include chloramphenicol and trimethoprim-sulfamethoxazole.
[5] Antibiotic therapy especially required in infants with persistent high fever.
[6] Tinidazole and ornidazole can also be used in accordance with the manufacturers' recommendations.

DIARRHOEA TREATMENT CHART

HOW TO ASSESS YOUR PATIENT

		A	B	C	D
1. ASK ABOUT:	DIARRHOEA	Less than 4 liquid stools per day	4 to 10 liquid stools per day	More than 10 liquid stools per day	Longer than 3 weeks duration (chronic diarrhoea)
	VOMITING	None or a small amount	Some	Very frequent	Blood or mucus in the stool
	THIRST	Normal	Greater than normal	Unable to drink	
	URINE	Normal	A small amount, dark	No urine for 6 hours	
2. LOOK AT:	CONDITION	Well, alert	Unwell, sleepy or irritable	Very sleepy, unconscious, floppy or having fits	Severe undernutrition
	TEARS	Present	Absent	Absent	
	EYES	Normal	Sunken	Very dry and sunken	
	MOUTH and TONGUE	Wet	Dry	Very dry	
	BREATHING	Normal	Faster than normal	Very fast and deep	
3. FEEL:	SKIN	A pinch goes back quickly	A pinch goes back slowly	A pinch goes back very slowly	
	PULSE	Normal	Faster than normal	Very fast, weak, or you cannot feel it	
	FONTANELLE (in infants)	Normal	Sunken	Very sunken	
4. TAKE TEMPERATURE					High fever - 38.5°C (or 101°F) or greater
5. WEIGH IF POSSIBLE		No weight loss during diarrhoea	Loss of 25-100 grams for each kilogram of weight	Loss of more than 100 grams for each kilogram of weight	
6. DECIDE		The patient has **no** signs of **dehydration** Use Plan A	If the patient has 2 or more of these signs, he has **some dehydration** Use Plan B	If the patient has 2 or more of these danger signs, he has **severe dehydration** Use Plan C	If the patient has chronic diarrhoea, severe undernutrition, or high fever, treat or refer to _____ for treatment. If there is blood or mucus in the stool and high fever, suspect dysentery and treat with antimicrobials.

TREATMENT PLAN A

TO PREVENT DEHYDRATION

EXPLAIN TO THE MOTHER HOW TO TREAT DIARRHOEA AT HOME FOLLOWING THREE RULES:

1. GIVE YOUR CHILD MORE FLUIDS THAN USUAL, such as:
   - rice water, fruit juice, weak tea, or salt and sugar solution and
   - breast milk, or milk feeds mixed with equal amounts of water

2. GIVE YOUR CHILD FOOD:
   - as much as he wants
   - 5 to 7 times a day
   - which is easy to digest
   - which contains potassium

3. WATCH FOR SIGNS OF DEHYDRATION. (You must show the mother how to ASK, LOOK AND FEEL for the signs. Then ask her to show you.)
   BRING YOUR CHILD BACK, IF:
   - you see any signs
   - your child has diarrhoea for another two days

TELL THE MOTHER THESE RULES ARE IMPORTANT. EXPLAIN THAT SHE CAN PREVENT DIARRHOEA, IF:

- she gives her child fresh, clean and weil-cooked food and clean drinking water
- she practices good hygiene

SHOW THE MOTHER HOW TO PREPARE AND GIVE ORS SOLUTION AT HOME, IF:

- her child has been on Plan B
- it is national policy to give ORS solution to all children who visit a health centre for diarrhoea treatment
- the mother cannot come back if the diarrhoea gets worse

GIVE THE MOTHER ENOUGH ORS PACKETS FOR 2 DAYS

AFTER EACH LOOSE STOOL, TELL HER TO GIVE:

- 50-100 ml (¼-½ cup) of ORS solution for a child less than 2 years old
- 100-200 ml for older children. Adults can take as much as they want

If the child vomits, tell her to wait 10 minutes and then continue slowly giving small amounts.

NOTE: Children being given ORS solution should not also receive salt and sugar solution.

TREATMENT PLAN B

TO TREAT DEHYDRATION WITH ORS SOLUTION

1. USE THIS TABLE TO SEE HOW MUCH ORS SOLUTION IS SUITABLE FOR 4-6 HOURS TREATMENT:

Patient's weight in kilograms		3 5 7 9 11 13 15 20 30 40 50					
Patient's age *		2 4 6 8 10 12 18 months → 2 3 4 6 8 15 years → adult					
Give this much solution for 4-6 hours	in ml:	200-400	400-600	600-800	800-1000	1000-2000	2000-4000
	in local unit of measure:						

* Use the patient's age only when you do not know the weight.

If the patient wants more ORS solution, give more. If the eyelids become puffy, stop and give other fluids. Use ORS solution again when the puffiness is gone.

If the child vomits, wait 10 minutes and then continue slowly giving small amounts of ORS solution.

2. IF THE MOTHER CAN REMAIN AT THE HEALTH CENTRE

- tell her how much ORS solution to give her child
- show her how to give it
- watch her give it

3. AFTER 4-6 HOURS REASSESS THE CHILD. THEN CHOOSE THE SUITABLE TREATMENT PLAN.

NOTE: FOR CHILDREN UNDER 12 MONTHS CONTINUING TREATMENT PLAN B AFTER 4-6 HOURS, TELL THE MOTHER TO GIVE:

- breast milk feeds between drinks of the ORS solution, or
- 100-200 mls of clean water before continuing ORS if she does not breast feed her child

4. IF THE MOTHER MUST LEAVE ANY TIME BEFORE COMPLETING TREATMENT PLAN B, TELL HER:

- to finish the 4-6 hour treatment as in 1. above
- to give the child as much ORS solution as he wants after the treatment
- to look for the signs of dehydration and, if the child has any, to return the next morning

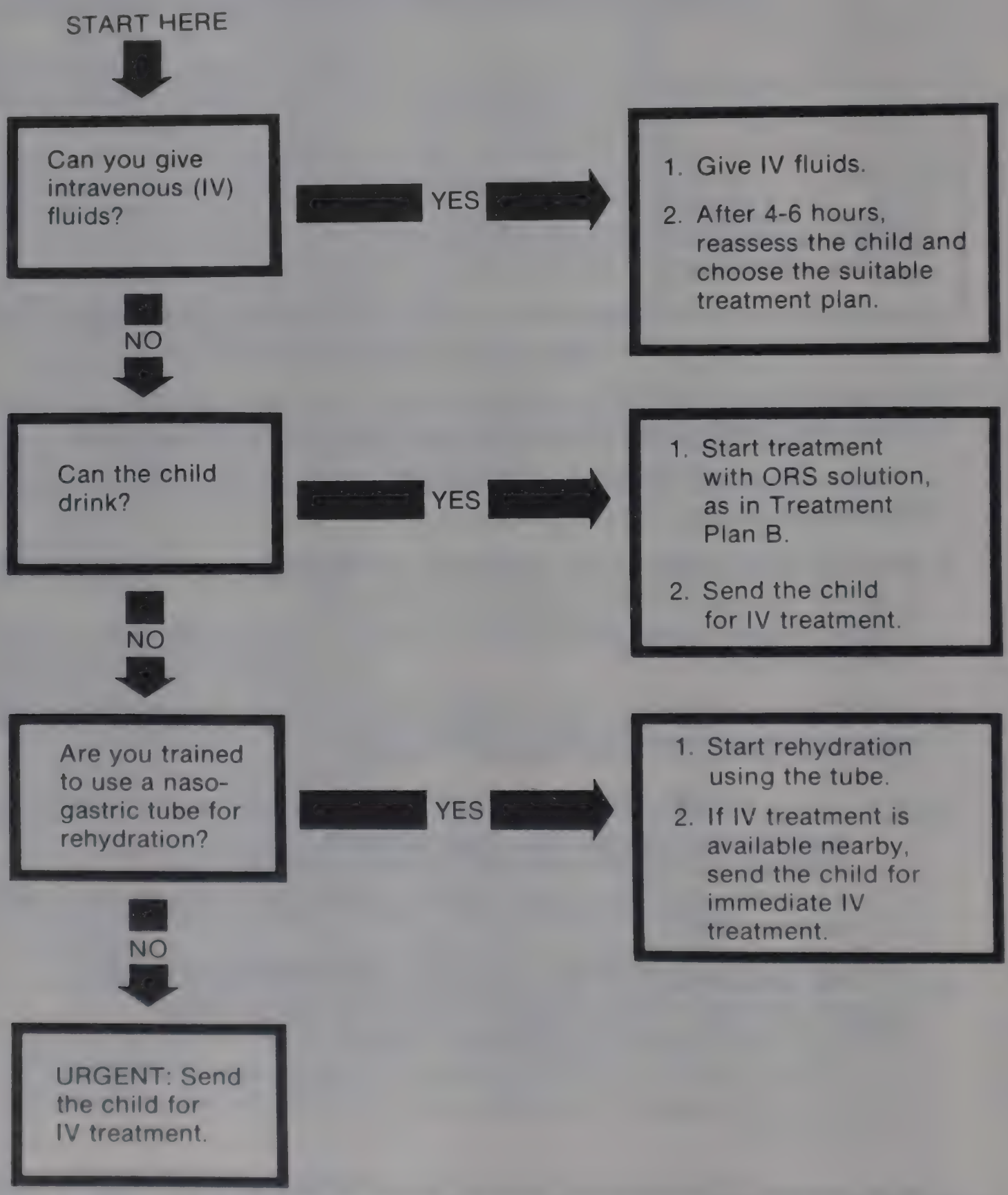
Give her enough ORS packets for 2 days and show her how to prepare ORS solution.

Explain briefly how to prevent diarrhoea.

TREATMENT PLAN C

TO TREAT SEVERE DEHYDRATION QUICKLY

Follow the arrows. If the answer to the questions is 'yes', go across. If it is 'no', go down.


START HERE
Can you give intravenous (IV) fluids?
YES
1. Give IV fluids.
2. After 4-6 hours, reassess the child and choose the suitable treatment plan.
NO
Can the child drink?
YES
1. Start treatment with ORS solution, as in Treatment Plan B.
2. Send the child for IV treatment.
NO
Are you trained to use a naso-gastric tube for rehydration?
YES
1. Start rehydration using the tube.
2. If IV treatment is available nearby, send the child for immediate IV treatment.
NO
URGENT: Send the child for IV treatment.

NOTE: If there is a high fever, show the mother how to cool the child with a wet cloth and fanning.

DEFINITIONS OF TERMS

Acute diarrhoea - 3 or more abnormally loose or watery stools per day for less than 3 weeks. Acute diarrhoea is caused by an infection of the bowel.

Antimicrobials - drugs that kill microorganisms or stop their growth.

Axillary temperature - temperature taken in the armpit.

Chronic diarrhoea - 3 or more abnormally loose or watery stools per day for more than 3 weeks. Chronic diarrhoea is caused by an infection of the bowel, by undernutrition, or by worms and other parasites.

Dehydration - loss of a large amount of water and salt from the body.

Diarrhoea - A disease characterized by frequent passage of abnormally loose or watery stools. Since what is considered a normal stool varies between cultural groups, abnormal stools are probably best described by the mother.

Dysentery - a type of acute diarrhoea which has blood and mucus in the stool and a high fever.

Fits - sudden, unusual, uncontrolled muscular movements which can occur in the head, neck, chest, arms, or legs.

Fontanelle - the soft spot on top of the head of a child until the age of about 12 months.

Radial Pulse - pulse which is felt on the outer or thumb side of the wrist.

Register - a book or list which contains the daily record of events. A register in a health facility may contain dates, names, ages, and services provided.

Rehydration - the replacement of water and salts that have been lost from the body.

Unconscious - a condition where a person is not awake or aware, and cannot be aroused or awoken.